caused to be dragged or moved over said main surface of the frame buffer memory by movement of said cursor.

28. (amended) The method as claimed in claim 1, wherein the step of determining the resolution of the at least one display device comprises automatically choosing a standard resolutioni of the at least one display device being closest to a resolution of said portion, said step of programming including specifying to said display controller system said closest standard resolution.

IN THE DRAWINGS

Proposed change to Fig. 6 is submitted herewith for the Examiner's approval.

REMARKS

The Applicants thank the Examiner for his attention to the present application.

The specification, claims, and drawing have been amended in order to comply with what was agreed upon during the interview with the Examiner on September 12, 2002.

The specification has been amended to correct an error concerning the references to the figures. The reference to figure 8 was changed to figure 7 (age 11, line 12), the reference to figure 7 was changed to figure 6 (page11, line 6), and the reference to figure 6 was changed to figure 5 (page 10, line 27).

Support for the change to the reference numerals can be found in the "brief descriptions of the drawings" which describes figure 5 as "a high level block diagram illustrating the display controller system according to the third preferred embodiment in which the zoomed display toggles between two buffers and the main hardware

cursor is blit directly onto the zoom buffers" and figure 6 as "a high level block diagram illustrating the display controller system according to the fourth preferred embodiment in which the zoomed display toggles between three buffers". From the figures, it is clear that the main display buffer 50 in figure 6 comprises three "zoom buffers" whereas figure 5 indicates that the hardware cursor "can be blit into the zoom buffer display directly" (page 10, line 26) and comprises only two "zoom buffers". This shows that an unintentional shift occurred in the description of the figures starting from figure 5 and extending to figure 8. This error has now been corrected.

Reference numerals 31, 32, 70, and 71 have been removed from figure 6. The term "Front" has been removed from the third "Zoom Front Buffer". The "Zoomed Hardware Cursor" has also been removed from the figure. The arrow pointing from "CRTC2 and Drawing Engine cycle between 3 buffers for triple buffering" and "3D Drawing Engine" has been modified. The arrow indicating the "Secondary Display" has also been modified.

Proposed figure 6 is found to have support in the original description in the "Brief Description of the Drawings". As stated above, figure 6 is described as "a high level block diagram illustrating the display controller system according to the fourth preferred embodiment in which the zoomed display toggles between three buffers". Furthermore, in the specification on page 11, lines 6-10, it is stated that "Figure 7 shows the same implementation with triple buffering. Three buffers are allocated in memory, and the 3D drawing engine 60 and CRTC2 12 cycle through these buffers. Triple buffering is useful for minimizing any dependencies that may be imposed by the refresh rate limitations of the particular display being used". The Examiner can appreciate that the reference to figure 7 is actually a reference to figure 6. The proposed amendments of the present response will correct this error. Therefore, the original description contains full support for figure 6 as proposed in the response

dated June 27, 2002 filed in response to the non-final Office Action mailed March 27, 2002.

As agreed upon during the interview, a reference to step 112 of figure 2 was added in the specification. This addition was made on page 11, line 14, where "(step 112)" was inserted into the text after the "...scaling without filtering". Support for this can be found in the specification on page 9, line 30 to page 10, line 5.

Claims 1, 2, 5, 12, 13, 17, 21, 22 and 25 were amended to change "frame buffer" to main surface of the frame buffer", as was agreed upon with the Examiner. This change should not raise any new issues.

Claim 12 has also been amended to change "said display device" to "a single display device". Claims 6-10 have been amended to change "associated with" to "of".

Claim 28 was amended to include "choosing". This term was omitted when the claim was submitted. The addition of the term does not change the intended meaning or scope of the claim.

As requested by the Examiner, the Applicants would like to point out that support for the "toggling" of claim 12 can be found in the "Summary of the Invention". Page 4 line 23 states " the user will need to toggle between the various zoom areas once they have been defined". Furthermore, page 4, line 28 to page 5, line 2 states " It is also possible to use a single display device, and to toggle between a display of the main surface memory and one of the user selected zoom windows on the same display. In the case of a multiple display desktop displaying the main surface memory, the invention may also allow the user to toggle between a zoom window and the main surface memory for one or all display devices".

Furthermore, support for claims 5 and 25, which describe dragging or moving a selected portion over the main surface, can be found in the summary of the invention. Page 3, lines 4-6 state "Once the frame has been defined, the frame can be moved relative to the movement of an input device if a panning feature is enabled". This means an input device such as a mouse can be used to drag or move the frame to a desired location on the main surface. Support can also be found on page 4, lines 13-16 where it is stated that "The location of the selected zoom area once defined can be static in order to fix the zoom window on one region of the display or locked to the movement of any user input through an input device (keyboard, absolute or relative pointing device, e.g. mouse)".

With respect to the reference by Ranganathan, Applicants believe the reference does not teach adjusting an aspect ratio. Claim 1 of the present application clearly states a step of determining a resolution of the zoom display device, followed by a step of adjusting an aspect ratio of a portion defined by the user input to correspond to the resolution. Ranganathan does not comprise this step.

In view of the foregoing, a Notice of Allowance for claims 1-33 is respectfully requested.

Respectfully submitted,
Kamran AHMED et al.

By:

Robert Mitchell, Reg. No. 25,007

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Robert Mitchell

Name of person signing certification

Signature

Oct 28, 02

Date

Marked up copy of specification changes in accordance with 37CFR§1.121(c)(ii)

Page 10, line 24

It will be appreciated that the hardware cursor which is overlaid on top of the main display may also need to be scaled so that is can be seen on the secondary display. Alternatively, the hardware cursor can simply be BLIT (bit block transferred or copied) into the zoom buffer directly (see Figure 5~~6~~).

Page 11, line 6

Figure 6~~7~~ shows the same implementation with triple buffering. Three buffers are allocated in memory, and the 3D drawing engine 60 and CRTC2 12 cycle through these buffers. Triple buffering is useful for minimizing any dependencies that may be imposed by the refresh rate limitations of the particular display being used.

Page 11, line 12

Once the use of filtering or no-filtering is decided (step 110), the 3D drawing engine is used to provide filtering (step 111), or the 3D drawing engine is used to provide scaling without filtering (step 112). Alternatively to using the 3D drawing engine 60, the backend scaler of CRTC2 12 can also be used to scale the zoomed window (see Figure 7~~8~~). The CRTC2 12 is set to read from the location where the zoom window is located and the scaler is programmed to scale using the determined scale factor. The zoom window can be fetched directly from the main display buffer or the zoom window can be copied (blit) into another region in memory and the CRTC2 (12) can read from there (see Figure 8). In this case, the control of filtering and non-filtering, will depend on the filtering capabilities of the specific scaling unit used.

Marked up copy of claims in accordance with 37CFR§1.121(c)(ii)

1. (three times amended) A method of controlling a display controller system to provide a display surface zoom, said display controller system having a main surface of a frame buffer memory and output to at least one zoom display device, the method comprising the steps of:

receiving user input defining coordinates of a fixed position frame portion within said main surface of the frame buffer memory;

determining a resolution of said at least one zoom display device and adjusting an aspect ratio of said portion defined by said user input to correspond to said resolution;

programming said display controller system to implement said display surface zoom to provide a full screen view of said portion on said at least one zoom display device;

in said display controller system, scaling said portion of said main surface of the frame buffer memory;

in said display controller system, converting said scaled portion of said main surface of the frame buffer memory into a display signal; and

outputting said display signal from said display controller system to said at least one zoom display device.

2. (twice amended) The method as claimed in claim 1, wherein said step of converting includes incorporating a representation of a cursor in said display signal, said cursor having a position defined by a cursor position memory used for said main surface of the frame buffer memory.

5. (twice amended) The method as claimed in claim 1, wherein said user input further includes a cursor control device input used to control a cursor, and said portion is

caused to be dragged or moved over said main surface of the frame buffer memory by movement of said cursor.

6. (amended) The method as claimed in claim 1, wherein said scaling comprises using a drawing engine of ~~associated with~~ said display controller system to scale said portion into a buffer.

7. (amended) The method as claimed in claim 1, wherein said scaling comprises using a backend scaler of ~~associated with~~ said display controller system to scale said portion.

8. (amended) The method as claimed in claim 7, wherein said scaling further comprises using a backend scaler of ~~associated with~~ said display controller system to scale a hardware cursor associated with said portion.

9. (amended) The method as claimed in claim 6, wherein said scaling further comprises using a drawing engine of ~~associated with~~ said display controller system to scale a hardware cursor associated with said portion into a separate hardware cursor buffer.

10. (amended) The method as claimed in claim 6, wherein said scaling further comprises using a drawing engine of ~~associated with~~ said display controller system to scale a hardware cursor associated with said portion and overlay it onto said buffer.

12. (twice amended) The method as claimed in claim 1, wherein said display controller system comprises a single display output, and said user input causes a single display device ~~said single display~~ to switch between displaying said portion and displaying essentially all of said main surface of the frame buffer memory, whereby said zoom is provided independently of an application program.

13. (twice amended) The method as claimed in claim 1, wherein said display controller system comprises at least two displays outputs, a first one of which displaying essentially all of said main surface of the frame buffer memory, and a second one of which displaying said scaled portion in a full screen view.

17. (twice amended) The method as claimed in claim 15, wherein said step of receiving user input further comprises:

associating said input defining said at least one said portion with one of a plurality of application programs,

wherein said step of receiving input selecting one of said at least two portions comprises determining which one of a plurality of application programs is currently active and providing output to said main surface of the frame buffer memory in order to select from at least one of said portions of said main display surface associated with said currently active one of said plurality of said application programs.

21. (three times amended) A method of controlling a display controller system to provide a display surface zoom, said display controller system having a main surface of a frame buffer memory and output to at least one zoom display device, the method comprising the steps of:

receiving user input defining coordinates of a fractional portion of said main surface of the frame buffer memory to be scaled and displayed, said fractional portion being a non-integer fraction of said main surface of the frame buffer memory;

determining a resolution of said at least one zoom display device and adjusting an aspect ratio of said portion defined by said user input to correspond to said resolution;

programming said display controller system to implement said display surface zoom to provide full screen view of said portion on said at least one zoom display device;

scaling said portion of said main surface of the frame buffer memory;

converting said scaled portion of said main surface of the frame buffer memory into a display signal; and

outputting said display signal to said at least one zoom display device.

22. (twice amended) The method as claimed in claim 21, wherein said step of converting includes incorporating a representation of a cursor in said display signal, said cursor having a position defined by a cursor position memory used for said main surface of the frame buffer memory.

25. (twice amended) The method as claimed in claim 21, wherein said user input further includes a pointing device output used to control a cursor, and said portion is caused to be dragged or moved over said main surface of the frame buffer memory by movement of said cursor.

28. (amended) The method as claimed in claim 1, wherein the step of determining the resolution of the at least one display device comprises automatically choosing a standard resolution of the at least one display device being closest to a resolution of said portion, said step of programming including specifying to said display controller system said closest standard resolution.

Not approved
11/04/02
JB

Marked up copy of drawing changes In accordance with 37CFR§1.121(c)(ii)

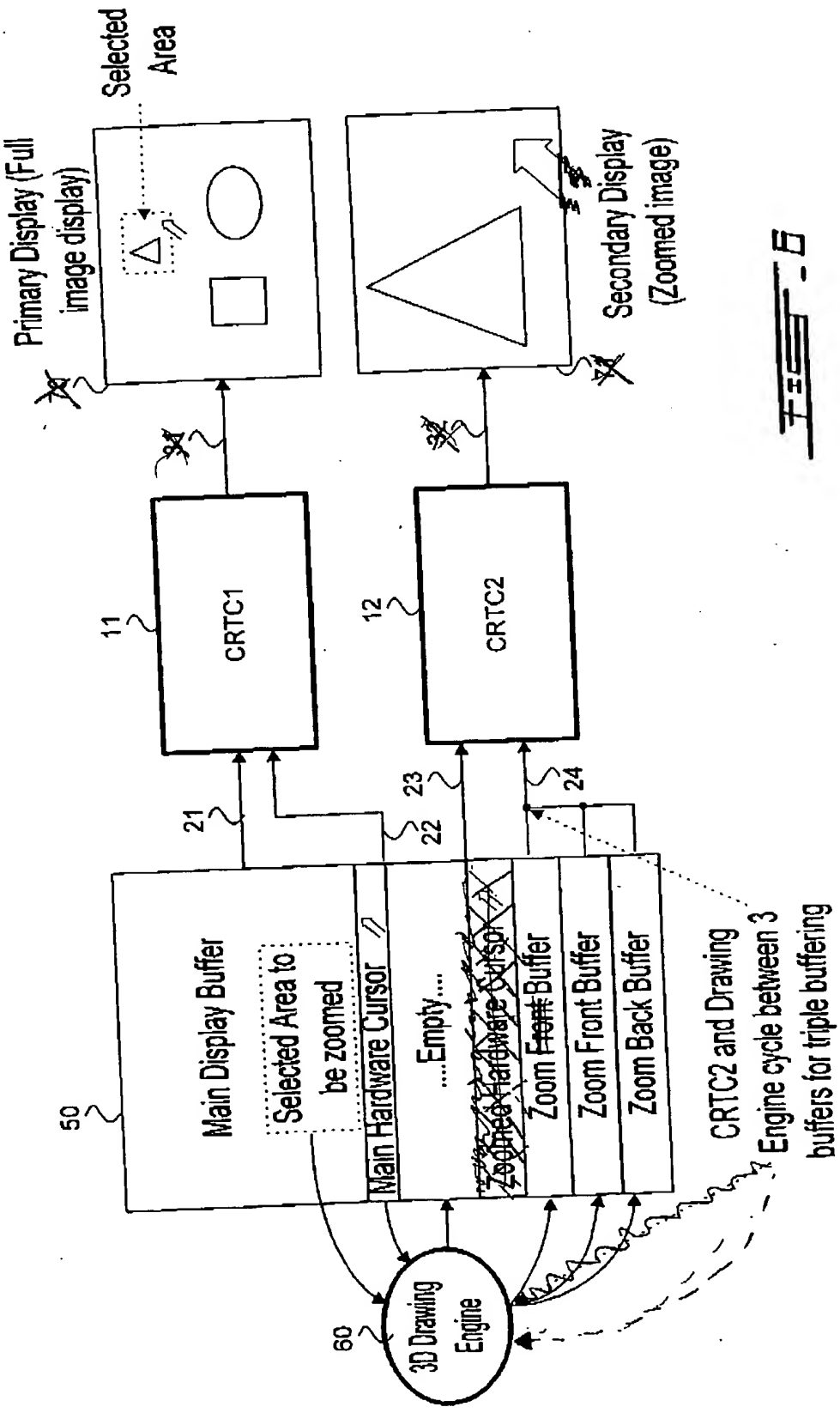

FIG - 5